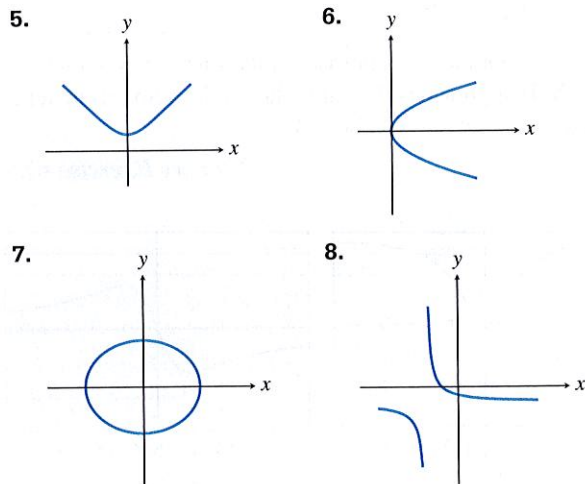


SECTION 1.2 EXERCISES

In Exercises 1–4, determine whether the formula determines y as a function of x . If not, explain why not.

1. $y = \sqrt{x-4}$
2. $y = x^2 \pm 3$
3. $x = 2y^2$
4. $x = 12 - y$

In Exercises 5–8, use the vertical line test to determine whether the curve is the graph of a function.



In Exercises 9–16, find the domain of the function algebraically and support your answer graphically.

9. $f(x) = x^2 + 4$
10. $h(x) = \frac{5}{x-3}$
11. $f(x) = \frac{3x-1}{(x+3)(x-1)}$
12. $f(x) = \frac{1}{x} + \frac{5}{x-3}$
13. $g(x) = \frac{x}{x^2-5x}$
14. $h(x) = \frac{\sqrt{4-x^2}}{x-3}$
15. $h(x) = \frac{\sqrt{4-x}}{(x+1)(x^2+1)}$
16. $f(x) = \sqrt{x^4-16x^2}$

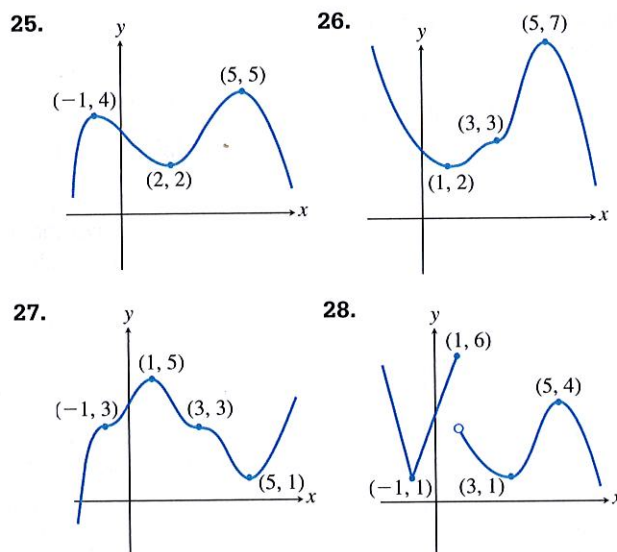
In Exercises 17–20, find the range of the function.

17. $f(x) = 10 - x^2$
18. $g(x) = 5 + \sqrt{4-x}$
19. $f(x) = \frac{x^2}{1-x^2}$
20. $g(x) = \frac{3+x^2}{4-x^2}$

In Exercises 21–24, graph the function and tell whether or not it has a point of discontinuity at $x = 0$. If there is a discontinuity, tell whether it is removable or nonremovable.

21. $g(x) = \frac{3}{x}$
22. $h(x) = \frac{x^3+x}{x}$
23. $f(x) = \frac{|x|}{x}$
24. $g(x) = \frac{x}{x-2}$

In Exercises 25–28, state whether each labeled point identifies a local minimum, a local maximum, or neither. Identify intervals on which the function is decreasing and increasing.



In Exercises 29–34, graph the function and identify intervals on which the function is increasing, decreasing, or constant.

29. $f(x) = |x+2| - 1$
30. $f(x) = |x+1| + |x-1| - 3$
31. $g(x) = |x+2| + |x-1| - 2$
32. $h(x) = 0.5(x+2)^2 - 1$
33. $g(x) = 3 - (x-1)^2$
34. $f(x) = x^3 - x^2 - 2x$

In Exercises 35–40, determine whether the function is bounded above, bounded below, or bounded on its domain.

35. $y = 32$
36. $y = 2 - x^2$
37. $y = 2^x$
38. $y = 2^{-x}$
39. $y = \sqrt{1-x^2}$
40. $y = x - x^3$

In Exercises 41–46, use a grapher to find all local maxima and minima and the values of x where they occur. Give values rounded to two decimal places.

41. $f(x) = 4 - x + x^2$
42. $g(x) = x^3 - 4x + 1$
43. $h(x) = -x^3 + 2x - 3$
44. $f(x) = (x+3)(x-1)^2$
45. $h(x) = x^2\sqrt{x+4}$
46. $g(x) = x|2x+5|$